U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

DEC 14 2009

Mr. Robert A. Stewart
UPS Component Shop Supervisor
UPS Hydrostatic Shop
UPS Aircraft Maintenance Hangar
750 Grade Lane
Louisville, KY 40213

Ref. No.: 09-0198

Dear Mr. Stewart:

This is in reference to your August 13, 2009 letter in which you again ask about possible tolerance requirements for the permanent expansion reading for the calibrated cylinder.

As stated in my previous responses, the cylinder requalifier must use a calibrated cylinder or other approved method to verify the accuracy of the test equipment system. When the calibrated cylinder is pressurized, the test equipment must be verified as accurate within ± 1.0% of the calibrated cylinder's pressure and the corresponding expansion value shown on the cylinder calibration certificate. When the pressure is released, this calibration process requires that the calibrated cylinder exhibit no permanent expansion as specifically stated in § 180.205(g)(4).

With regard to your reference to the Compressed Gas Association (CGA) C-1, currently the HMR do not incorporate the publication by reference. We may consider incorporating by reference this publication or certain provisions of the CGA C-1 publication in a future rulemaking.

I hope this information is helpful. Please contact us if you have additional questions.

Sincerely yours,

Hattie L. Mitchell
Chief, Regulatory Review and Reinvention
Office of Hazardous Materials Standards

Leary
§180.205(g)(4)
Cylinders
09-0198

August 13, 2009

VIA UPS NEXT DAY AIR

Office of Hazardous Materials Standards
Regulatory Review and Reinvention
Hattie Mitchell, Chief
400 7th St., S.W.
Washington, DC 20590

Ref. No.: 07-0077

Dear Ms. Mitchell,

Thank you for your letter dated July 8, 2009, in which you responded to our questions from (Ref. No.: 07-0059) dated April 6, 2007. However, I must disagree with your responses.

You state in A1. "This is a separate requirement and is not related to the test equipment ± 1.0% accuracy requirement. Thus, the HMR do not specify a tolerance in determination of permanent expansion of a calibrated cylinder when used to demonstrate the accuracy of a retest system. Any permanent expansion may indicate entrapment of air or other malfunction of the equipment."

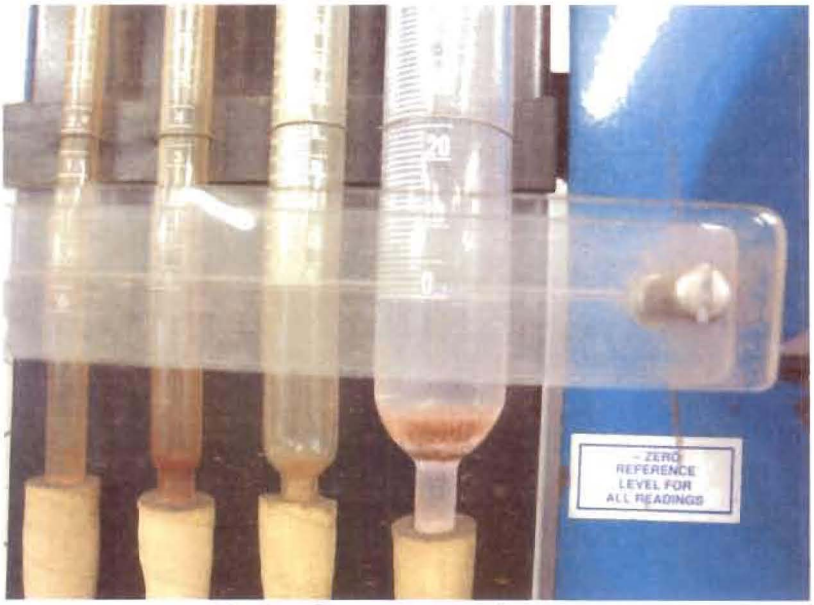
Paragraph (g) (4) which specifies that the calibrated cylinder must show "no permanent expansion." was discussed in great length at the last Compressed Gas Association conference. It was determined at this conference that the calibrated cylinder is an integral part of the test equipment and there should be a tolerance for "Zero expansion" for the calibrated cylinder during the calibration of the system. In CGA pamphlet C1 Tenth Edition Paragraph 5.5.1 **Verification requirements** "*The calibrated cylinder shall return to zero within ± .1% of the total expansion of any point or ± .1 cc which ever is greater.*" PHMSA personnel have been involved with the Compressed Gas Association for a very long time. While I recognize that C-1 is not currently incorporated within 49 CFR, the participants in the C-1 subcommittee are recognized as the industry leaders in hydrostatic testing, and included personnel from PHMSA. No true clarification for "Zero expansion" has been one of the reasons it has not been incorporated. I am pleased that the CGA has recognized the disparity in reading and interpretation between the Burette vs. the Electronic test systems. However, I still do not feel that this is an accurate quantitative specification for "Zero expansion".

Also, as a point of clarification, the end result of air in the expansion lines will result in negative expansion, not positive permanent expansion.

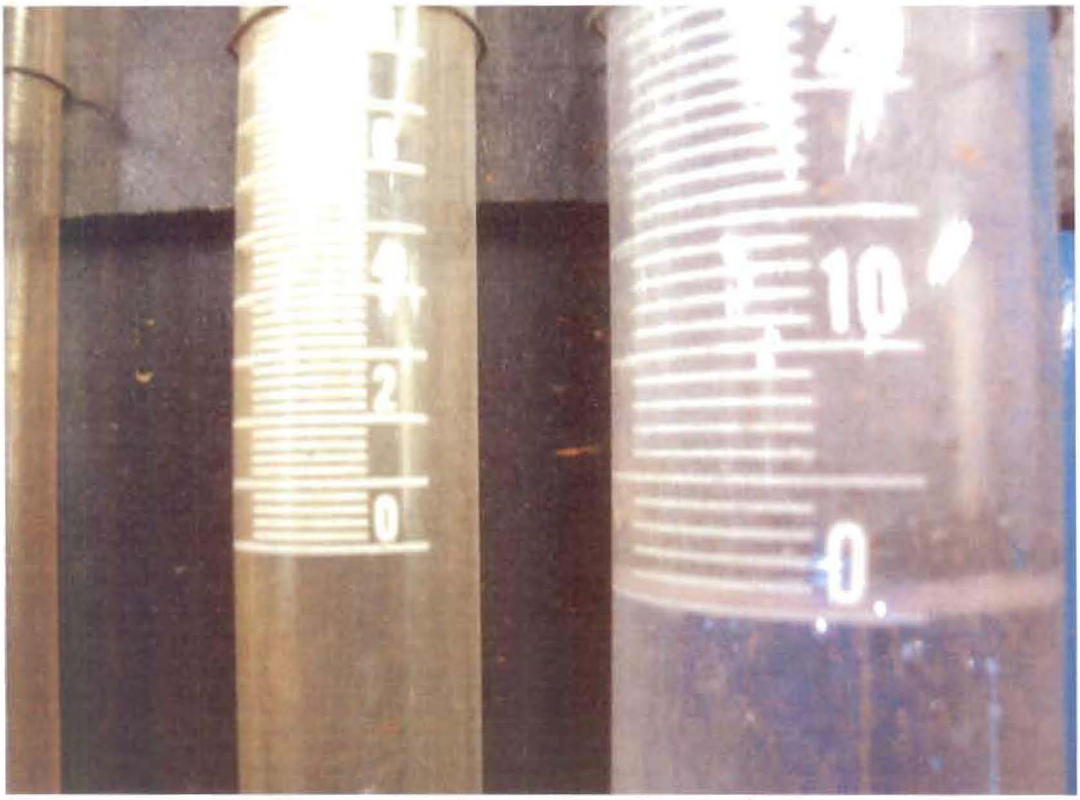
In A2 you state. "The requirement is the same regardless of the type of equipment used. The calibrated cylinder must show "no permanent expansion." This means that the water level in the burette or the weight bowl must return to the same point where it began – not slightly higher or lower. Rounding is not permitted when determining whether the calibrated cylinder has shown permanent expansion. Any volume of water measured in the EID above zero (or the original reading) indicates permanent expansion of the calibrated cylinder. If this occurs, the equipment has not been proven to be accurate in accordance with the HMR."

I have never read or heard the term "rounding" ever used in 49 CFR or in any CGA document. The term used in 49 CFR and CGA C-1 is "reading". According to 49 CFR 180.205(g)(3) (ii), *The expansion-indicating device, as part of the retest apparatus, gives a stable* ***reading*** *of expansion and is accurate to ± 1.0% of the total expansion of any cylinder tested or 0.1cc, whichever is larger. The expansion –indicating device itself must have an accuracy of ±0.5%, or better, of its full scale.* When you are reading a Burette the reference point indicator should be positioned so that measurements can be taken conveniently at eye level. Burette reading (at bottom of meniscus) is read to the nearest: marked increment or midpoint between marked increments. When reading a 1cc burette the Burette system would be considered calibrated with (.1cc, .2cc, .3cc, .4cc) expansion at "Zero". This is accomplished by the adjustment panel which is moved so the meniscus of the water column in the graduated burette is at the same level as the reference point indicator of the test panel. As you can see from the photo's it is virtually impossible to read the .1cc, .2cc, .3cc and .4cc on the burette.

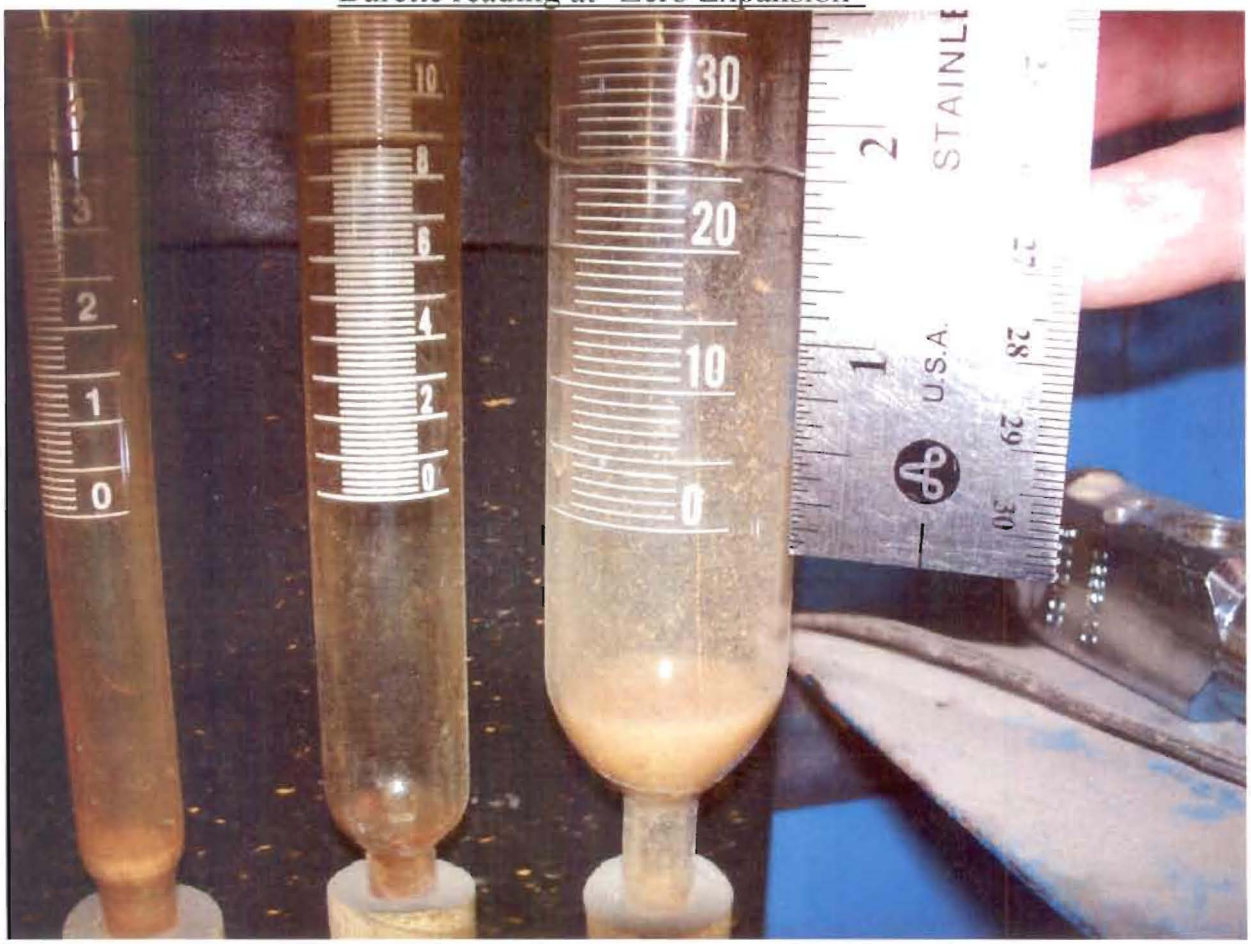
Here are three photos' that illustrate the difficulty of reading a 1cc increment burette.



Hydro Test Burette System



Burette reading at "Zero Expansion"



Enlarged photo to show scale readings on burette and scale

Those photos of an actual burette system show that readings of .1cc, .2cc, .3cc and .4cc readings would be impossible to make on a burette of the size required for the expansion of our calibrated cylinder. However, these are the very readings that PHMSA has cited as violations on our electronic expansion measuring device. You stated, "The requirement is the same regardless of the type of equipment used." However, as demonstrated by these photos, the retest facility using the above burette would not be facing the violations that you have leveled against UPS, because they don't have the ability to see those readings.

Here are two photos of UPS high precision test system capable of reading 0.1cc through its full range.

.1cc reading on UPS Galiso Recortest Hydrostatic Test System

UPS System calibrating "Zero Expansion and Zero Pressure"

After seeing both test systems in the photographs, it is obvious there is a big difference in reading the expansion levels between the less accurate burette test system and the precise electronic test system.

Now that the CGA (which is made-up of the industry experts and PHMSA personnel) has identified that there should be a tolerance for "Zero expansion" I feel it is in the best interest of the PHMSA to accomplish a field study or, scientific shop study to establish an accurate tolerance for "Zero expansion".

During these uncertain economic times the PHMSA should be doing everything possible to ensure an even playing field. Companies with burette systems should not be given an unfair competitive advantage over the highly accurate computer systems.

I feel it is time to dismiss for the Notice of the Probable Violations on PHMSA Case No. 06-0257-CRS-CE. Due to the corrective actions taken by UPS, the lack of timely response from PHMSA and the "Double Standard" (Burette vs. Electronic) UPS has endured. I hope we can resolve this matter without having to request a Formal Administrative Hearing in accordance with 49 CFR 107.319.

Best Regards

Robert A. Stewart
UPS Component Shop Supervisor
UPS Hydrostatic Shop (RIN number G305)
UPS Aircraft Maintenance Hangar
750 Grade Lane
Louisville, KY 40213
Telephone: (502)-359-8274
Fax: (502)-359-7277